

IN THE SPECIFICATION

Please amend the paragraph at page 5, lines 23-28, as follows:

It is possible to configure the structure so that only one electron is excited into a level of the quantum dot by the radiation. This can be done by either polarising polarizing the incident light so that it is circularly polarised polarized with a single orientation direction (i.e., either left or right)[[. Or]], or a magnetic field can be applied to the device to lift the spin degeneracy of the conduction band level. Only one electron can then be accommodated in a single conduction band level.

Please amend the paragraph at page 6, lines 26-30, as follows:

If the conduction band contains two electrons, the two photons which are emitted can be separated by filtering out the unwanted photons with a polariser polarizer. If two electrons recombined with two holes, then the two photons emitted will have different polarisations polarizations. Therefore, a polarisation polarization splitter will allow a regular stream of single photons with predetermined polarisation polarization to be produced.

Please amend the paragraph at page 8, lines 11-23, as follows:

The transition energy of the quantum dot can be modulated so that the confined energy level is only capable of being populated by carriers for a certain time. This should be less than the relaxation time of the photoexcited electron-hole pair. Therefore, although the radiation intensity is constant, light can only be absorbed by the quantum dot for the short time that the transition energy equals radiation energy. The electron and hole can then recombine to emit a photon in the same way as described with reference to excitation by the pulsed laser. Sometime later, the transition energy of the quantum dot will be swept through the laser energy again and the dot is able to absorb an electron and hole again. Again, the degeneracy of the level may be lifted by application of a magnetic field or, a single electron may be introduced into the level by polarisation polarization of the incident radiation. As before, the emitted radiation can be filtered to remove emitted light from the specific polarisation polarization or to remove photons which arise due to recombination within other quantum dots.

Please amend the paragraph at page 26, lines 10-15, as follows:

In Figure 2, the laser pulse is passed through a polarisation polarization filter to select the required polarisation polarization, be it one of the orthogonal components of left or right circularly polarised polarized. The polarised polarized beam is then focused onto the single photon source 21 by lens 27. The output from single photon source 21 is then coupled into optical fibre 29. Optical fibre 29 is then fed through polarisation polarization splitter 31 which is capable of separating the two orthogonally polarised polarized components of the emitted photon beam.

Please amend the paragraph at page 29, lines 10-15, as follows:

It is also possible to limit the absorption of the dot to just one electron and one hole by polarising polarizing the exciting light. A circularly polarised polarized laser will excite just one of the electron spin states, and one of the hole spin states. If the time for which the dot is excited is also shorter than time for either the electron or the hole to scatter to its other spin state, then the dot can absorb only one electron and one hole per laser pulse. In this case there will be one photon emitted per excitation pulse of the laser.

Please amend the paragraph at page 29, lines 17-19, as follows:

It is [[be]] possible to limit the emission from each quantum dot to single photons by filtering the polarisation polarization of the emitted light[[. For]], for example, using the polarisation polarization splitter 31.

Please amend the paragraph at page 30, lines 16-26, as follows:

Figure 7 shows an arrangement for collecting single photons emitted from the single photon source 21. The source has a plurality of quantum dots. In such a source, each of the quantum dots will probably have slightly different transition energies due to variations in size between the dots. Therefore, although in this particular arrangement, many of the dots will emit single photons, each of the dots will emit photons at different energies. It is possible to select photons of a particular energy (i.e. from [[when]]) quantum dots) by using wavelength filter 60. Therefore, optical fibre 29 collects photons of all energies from single photon source 21 and feeds it into wavelength filter 60. The filter signal is then fed into polarisation polarization splitter 31 as described with reference to Figure 2. The arrangement of the

pulsar diode 23, the ~~polarisation~~ polarization filter 25 and the lens 27 are identical to those described with reference to Figure 2.

Please amend the paragraph beginning at page 32, line 30, to page 33, line 5, as follows:

Figure 13 shows [[and]] an electrically triggered quantum dot filter. The single photon source 21 is illuminated by a CW (continuous wave) laser with a narrow spectral line width 24. The CW laser 24 provides, as the name suggests, a continuous intensity and does not emit a pulsed signal. The wavelength of the CW laser is tuned to an optical transition energy of the quantum dot. The output from the CW laser is passed through a ~~polarisation~~ polarization filter 25 and focused by lens 27 onto single photon source 21 as previously described with reference to Figure 2.